

Prepared on behalf of

Euro Garages Ltd

Development
Holt Road, Wrexham

Sustainable Urban Drainage Systems (SUDS): Phasing, Implementation, Maintenance and Management Plan

Acknowledgements:

Disclaimer

The methodology adopted and the sources of information used by Sanderson Associates (Consulting Engineers) Ltd in providing its services are outlined within this Report.

Any information provided by third parties and referred to herein has not been checked or verified by Sanderson Associates (Consulting Engineers) Ltd, unless otherwise expressly stated within this report.

This report was checked and approved on the 18 December 2018 and the Report is therefore valid on this date, circumstances, regulations and professional standards do change which could subsequently affect the validity of this Report.

Copyright

All intellectual property rights in or arising out of or in connection with this report are owned by Sanderson Associates (Consulting Engineers) Ltd. The report has been prepared for Euro Garages Ltd (the 'Client') who has a licence to copy and use this report only for the purposes for which it was provided. The licence to use and copy this report is subject to other terms and conditions agreed between Sanderson Associates (Consulting Engineers) Ltd and the Client.

This document cannot be assigned or transferred to any third party and no third party may rely upon this document without the express written agreement of both Sanderson Associates (Consulting Engineers) Ltd and the Client.

Report Ref:	10802/LM/001/01	December 2018	
Author:	Lee Mozley		
Checked & Approved:	Peter Maurice	Date:	18.12.18

Contents

Page No

1	Introduction.....	5
2	Site Information	6
3	Proposed Drainage Strategy.....	7
4	Phasing and Implementation of the SuDs Scheme	9
5	Maintenance / management of the proposed SuDs.....	12

Appendices

APPENDIX A

Drawing 10802/500/001 – Drainage Layout

1 Introduction

- 1.1 This report has been prepared on behalf of Euro Garages Ltd to accompany an application for a proposed Petrol Filling Station on vacant land to the north of the roundabout linking the A534 Holt Road and the A5156
- 1.2 This SuDS Phasing / Implementation, Maintenance and Management Plan has been developed to address the planning obligations and will also provide best practice guidance for how the scheme will be maintained and managed over the lifetime of the development, including any arrangements for adoption by any public body or Statutory Undertaker. Ultimately any maintenance of the SuDS drainage features listed below will be the responsibility of the private management company and relevant adopting authority.

2 Site Information

- 2.1 The total site area measures approximately 1.60ha and is presently undeveloped green field with no existing drainage outfalls.
- 2.2 The site topography falls from a contour levels of 78.60m AOD along the northern boundary to a contour level of 73.50m AOD along the eastern boundary and a contour levels of 76.20m AOD along the southern boundary.
- 2.3 An existing publically maintained foul water sewer is present in Holt Road to the west of the proposed development which is the responsibility of Welsh Water.

3 Proposed Drainage Strategy

- 3.1 The underlying soils are considered suitable for disposal of surface water runoff to ground by infiltration with 2 No. soakaway tests establishing infiltration rates to vary from 3.7×10^{-05} m/s to 6.3×10^{-05} m/s.
- 3.2 The drainage network and attenuation volume has been designed using MicroDrainage software and has been modelled in accordance with the requirements of Sewers for Adoption and Welsh Water. Attenuation volumes have been provided so that no flooding occurs for up to a 1 in 100 year + 30% climate change storm events. The results of the simulation modelling confirm that surface water run-off is to be attenuated in a combination of filter trenches with perforated drains directing flows to online infiltration basins which will be located within accessible public open space.
- 3.3 Foul water from the development will discharge via a system of underground pipework to a new pumping station located in the south-east corner of the site. The proposed pumping station will discharge to a publically maintained foul sewer located in Holt Road to the west of the proposed development via a rising main. It is the developer's intention for new foul water sewers to be offered for adoption to Welsh Water via a Section 104 Agreement of the Water Industry Act 1991.
- 3.4 It is the Developers intention for the new surface water underground pipework, filter trenches with associated perforated drains and infiltration basins to be maintained and managed by a private management company. Therefore, ownership and maintenance of the SuDS apparatus will be in accordance with the policies of the appointed private management company.

-
- 3.5 As the development progresses towards completion it will be important to continually monitor the ongoing operation and functionality of the SuDS features, giving consideration to the regular day to day care, occasional tasks and ongoing remedial work.

4 Phasing and Implementation of the SuDS scheme

- 4.1 The proposed surface water underground pipework, filter trenches with associated perforated drains and infiltration basins will be constructed at an early stage of the development's programme as part of the site earthworks phase. This will assist in managing construction runoff and help with settlement of sediments generated by the construction works.
- 4.2 Topsoil and seeding of the infiltration basins should not take place until site works have been completed. During the construction period, the surface of the infiltration basins should be lined with a sacrificial geotextile filter fabric, which will help to trap silt and prevent soil contamination.
- 4.3 Due to the small nature of the site, the installation of the primary infrastructure will be undertaken in a contract lasting approximately 16-20 weeks. From that point onwards the newly installed drainage can be used as part of a Temporary Surface Water Strategy.
- 4.4 It is not always possible to ensure that new impermeable areas are immediately connected to the drainage system. Therefore, the following additional measures will be implemented to ensure construction runoff is appropriately managed;
- Straw barriers and silt fencing placed along the site boundary to prevent sediment from washing downstream
 - Protective coverings to prevent runoff stripping stockpiles
 - Plant and wheel washing facilities to be incorporated at designated locations. The area should be tanked and not allowed to discharge into the proposed surface water drainage system or infiltrate into the ground.

Effluent must be treated as contaminated waste and disposed off-site by a licenced waste management operator.

- Access roads and storage areas should be swept and vacuumed regularly during construction to prevent accumulation of dust and mud.
- Should groundwater be encountered in excavations such water would not be discharged to the drainage system until the amount of suspended solids has been reduced through the controlled use of skips or tanks, which will act as stilling basins

4.5 To prevent contamination associated with the use of oils and hydrocarbons during construction, the Contractor should ensure that the following measures are employed;

- Regular maintenance of machinery and plant
- Use of drip trays
- Regular checking of machinery and plant for oil leaks
- Use of correct storage facilities
- Regular checks for signs of wear and tear on tanks
- Specific procedures are followed when refuelling
- Use of a designated area for refuelling
- Emergency spill kit to be located near refuelling area
- Regular emptying of bunds

- Tanks will be located in secure areas to stop vandalism

4.6 Upon completion, all underground pipework will be jet cleaned and CCTV surveyed. Areas of porous surfacing will be swept and cleaned and silt / debris present in the filter trench and infiltration basin removed. The Contractor will be responsible for rectifying any significant defects identified at this stage. A further inspection will be carried out by the Contract Administrator and on completion of any outstanding remedial works, the drainage system will be handed over and maintained as per chapter 5.

5 SuDS components and maintenance / management of the proposed surface water system

5.1 The purpose of this document is to set out the basis of the development SuDS Maintenance Plan and to ensure that the adopting management company is entrusted with a robust inspection and maintenance programme, ensuring the optimum operation and maintenance of the surface water drainage network for the lifetime of the development and to prevent the increased risk of flooding both on and offsite in accordance with the National Planning Policy Framework (NPPF)

5.2 SuDS components and maintenance plans of the proposed surface water system:

Filter Drain and Trench (Responsibility of Private Management Company)

Linear excavations filled with stone to collect surface water run-off via a number of point inlets. Surface water is filtered as it passes through the stone prior to flowing to the next part of the management train, the infiltration basins.

Maintenance	Action	Frequency
Regular maintenance	Litter and debris removal from site	Monthly
	Grass cutting around the trench where appropriate at 75-100mm and not to exceed 150mm	Monthly
	Inspect and clear inlets, outlets and inspection points	Monthly
	Silt removal from pre-treatment features	As required

Occasional Tasks	Inspect and remove silt from chambers and pipes	As required
Remedial Work	Remove surface stone layer and set aside, replace clogged geotextile and reinstate	As required
	De-silt stone fill using proprietary machinery as trunk road maintenance	As required
	Remove and replace filter drain stone	As required

Infiltration Basin (Responsibility of Private Management Company)

Similar to detention basins except that they are designed to allow water to soak into the ground as well as provide storage.

Maintenance	Action	Frequency
Regular Maintenance	Litter and debris removal from site	Monthly
	Amenity grass cutting at 35-50mm	As required
	Grass cutting to access routes, overflows and basin where required at 75-100mm not to exceed 150mm	As required

	Meadow grass, where appropriate, cut at 50mm and remove to wildlife or compost piles	Annually
	Check and clear inlets and overflow structures	Monthly
Occasional Tasks	Remove leaf accumulation	As required
	Cut back overhanging branches to allow dense vegetation growth	As required
	Remove sediments from forebay, inlets and pre-treatment structures	As required
Remedial Work	Inspect and repair damage to inlets, outlets, banks and overflows	As required
	Hollow tine and scarifying of surface if infiltration reduces over time	As required

Below Ground Drainage System (Responsibility of Private Management Company)

This includes all underground drainage pipework, manholes, inspection chambers and catch pits.

Maintenance	Action	Frequency
Regular Maintenance	Litter and debris removal from external hard landscaped areas and adjacent landscaping, which may pose a risk to the performance of the system	Monthly
	Remove build-up of sediment / silt in catch pits and dispose of oils / petrol residues using safe standard practices	Monthly
	Stabilise and mow adjacent landscaped areas and remove weeds	Monthly
Occasional Tasks	Check all inlets and outlets for blockages or evidence of physical damage	Every 6 monthly or after heavy rainfall
	Inspect all surfaces for ponding, or silt accumulation. Record areas where water is ponding for more than 48 hours and carry out any remedial work deemed necessary	After severe storms
Remedial Work	Repair inlets and outlets to ensure they are in good condition and operating as designed	As required

	Remediate any landscaping, which has raised to within 50mm of the level of adjacent hard landscaping	As required
--	--	-------------

APPENDIX A

Drawing 10802/500/001 – Drainage Layout
